UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/899,895	07/05/2001	Illah Nourbakhsh	20191.707	3588

24504 7590 02/23/2007

THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP
100 GALLERIA PARKWAY, NW
STE 1750
ATLANTA, GA 30339-5948

EXAMINER	
DESHPANDE, KALYAN K	
ART UNIT	PAPER NUMBER
3623	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/899,895	NOURBAKHSH ET AL.	
	Examiner	Art Unit	
	Kalyan K. Deshpande	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 November 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,7-9,13-17,20-22,26,27,30,31,33-36 and 40-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,7-9,13-17,20-22,26,27,30,31,33-36 and 40-59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. The following is a final office action in response to the communications received on November 27, 2006. Claims 1-3, 7-9, 13-17, 20-22, 26-27, 30-31, 33-36, and 40-59 are pending in this application. Applicants have not listed claim 9 as pending in the submitted remarks, however, have changed the status identifier in the claims to read "currently amended". Examiner is assuming the silence of the remarks as to claim 9 is a typographical error.

Response to Amendments

2. Applicants' amendments to claims 1, 15, 22, 36, 43-44, and 48 are acknowledged. Applicants' cancellation of claims 10, 19, 23-25, 28-29, 37-39 is acknowledged. New claims 50-59 are acknowledged. Per Applicants amendments, Examiner withdraws the previously asserted claim objections and 35 U.S.C. 112 first paragraph written description rejection.

Response to Arguments

3. Applicants' arguments filed on November 27, 2006 have been fully considered but are not found persuasive or are moot under new groups of rejection necessitated by amendment. Applicants argue i) Stuart fails to teach "receiving a definition for each of a plurality of agent profiles, comprising a group of agents that have similar characteristics, and wherein the definition includes the similar characteristics, including at least one skill, at least one performance measure, and at least one attribute specifying an amount of change in the number of agents in the group during a specified time period", as per

claims 1, 16, and 30, ii) Stuart fails to teach "specifying at least one criteria to be satisfied by a long-range staffing plan, wherein the plan covers a period that is more than a month in the future", as per claims 1, 16, and 30, and iii) Stuart fails to teach "iteratively adding additional agents from the agent profiles to the proposed schedule and iteratively calculating effects of adding the additional agents taking into account each agent already added until the available work for every agent in the plurality of agents profiles has been distributed", as per claims 1, 16, and 30. Applicants also argue that each associated dependant claim is allowable based on the arguments and amendments submitted for each independent claim.

In response to Applicants' argument Stuart fails to teach "receiving a definition for each of a plurality of agent profiles comprising a group of agents that have similar characteristics...including at least one skill", as per claims 1, 16, and 30, Examiner respectfully disagrees. Stuart explicitly teaches "receiving a definition for each of a plurality of agent profiles, comprising a group of agents that have similar characteristics, and wherein the definition includes the similar characteristics, including at least one skill, at least one performance measure, and at least one attribute specifying an amount of change in the number of agents in the group during a specified time period" (see column 7 lines 53-67, column 8 lines 6-37, column 11 lines 36-54, and column 12 lines 21-67; where agent profiles are defined. Agent profiles contain agent cost profiles, agent education, and agent training records. These variables are summed in to work group of agent teams. A work group or agent team is a group of agents. These variables are the same as the agent's capabilities. Furthermore, a variable defining the

composition of the group for a specified period of time can be defined. Specifically, a these variables can be monitored per work minute. Work team configurations are defined and received by the system to optimize them. Change to team sizes are determined using optimization techniques.). Applicants' specifically argue that Stuart teaches information regarding a specific agent, however, Examiner has not relied on this teaching of Stuart to reject this limitation. As was explicitly discussed in the interview, Examiner is correlating Stuart's teaching regarding the configuration of work groups and agent teams, and the changes in the configuration of such teams, including the change in the team size. Applicants' further argue that Stuart fails to teach "receiving a definition" based on the cited passages, however, Examiner cites column 8 lines 6-37 for this newly added amendment where a workforce configuration is received prior to optimization. Applicants further argue that Stuart fails to teach "at least one attribute specifying a change in the number of agents in the group during a specified period of time", specifically because Stuart is concerned with per-agent data. However, Stuart explicitly teaches the optimization of the team sizes during a specified period of time (see column 8 lines 6-37; where team sizes have a variable that is optimized over a period of time.).

Applicants' argument Stuart fails to teach "specifying at least one criteria to be satisfied by a long-range staffing plan, wherein the plan covers a period that is more than a month in the future" is moot under new grounds of rejection as necessitated by amendment.

In response to Applicants' argument Stuart fails to teach "iteratively adding

additional agents from the agent profiles to the proposed schedule and iteratively calculating effects of adding the additional agents taking into account each agent already added until the available work for every agent in the plurality of agents profiles has been distributed", as per claims 1, 16, and 30, Examine respectfully disagrees. Stuart explicitly teaches "iteratively adding additional other agents from the agent profiles to the proposed schedule and iteratively calculating effects of adding the additional agents taking into account each agent already added until the available work for every agent in the plurality of agent profiles has been distributed" (see column 15 lines 44-67, column 16 lines 1-19, column 17 lines 14-30, and column 19 lines 40-67; where the user has the ability to adjust the number of agents and teams. The agent costs are determined for each period of time based on expected uncertain loads. Linear programming optimization is the same as iterative summation.). Examiner respectfully submits that this limitation has been interpreted in light of the entire claim. Applicants specifically argue that iterative summation is not the same as linear optimization because linear optimization will be "computationally intractable". However, such a blanket statement fails to illustrate the difference between the iterative summation recited in the present invention and the commonly used technique of linear optimization taught by Stuart, therefore this argument fails to comply with 37 CFR 1.111(b) because it amounts to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. Applicants further argue that Stuart teaches load-balancing and the redistribution of the same agents. Applicants further allege that the present

invention is "orthogonal" from these teachings because the present invention adds one agent capacity one at a time thereby incrementally computing differences in the load. Examiner submits that incrementally computing the differences in the load is the same thing as load-balancing using linear optimization techniques, since linear optimization literally adds one value at a time until an optimal value is distinguished, thereby balancing the load. Applicants also allege that Stuart only deals with the redistribution of "the same agents" and cite column 17 lines 20-21 and column 8 lines 47-53, however, Stuart explicitly teaches adding agents from other agent profiles (agent work groups or agent teams) in order to achieve an optimal configuration (see column 15 lines 44-67 and column 16 lines 1-19).

Examiner notes the following discussion of Official Notice taken from the MPEP:

> To adequately traverse such a finding, an applicant must specifically point out the supposed errors in the examiner's action, which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art. See 37 CFR 1.111(b). See also *Chevenard, 139 F.2d at 713, 60 USPQ at 241* ("[I]n the absence of any demand by appellant for the examiner to produce authority for his statement, we will not consider this contention."). A general allegation that the claims define a patentable invention without any reference to the examiner's assertion of official notice would be inadequate. If applicant adequately traverses the examiner's assertion of official notice, the examiner must provide documentary evidence in the next Office action if the rejection is to be maintained. See 37 CFR 1.104(c)(2). See also *Zurko, 258 F.3d at 1386, 59 USPQ2d at 1697* ("[T]he Board [or examiner] must point to some concrete evidence in the record in support of these findings" to satisfy the substantial evidence test). If the examiner is relying on personal knowledge to support the finding of what is known in the art, the examiner must provide an affidavit or declaration setting forth specific factual statements and explanation to support the finding. See 37 CFR 1.104(d)(2). If applicant does not traverse the examiner's assertion of official notice or applicant's traverse is not adequate, the examiner should clearly indicate in the next Office action that the common knowledge or well-known in the art statement is taken to be admitted prior art because applicant either failed to traverse the examiner's assertion of official notice or that the traverse was inadequate. If the traverse was inadequate, the examiner should include an explanation as to why it was inadequate. (MPEP § 2144.03(C))

Applicant's silence as to Examiner's assertion of official notice results in the Applicant not having "specifically point[ed] out the supposed errors in the examiner's action, which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art." For these reasons, "hiring agents into a profile", "using multiple types of media and have agents with skills in multiple media", and "initializing an agent profile load to zero" are taken to be admitted prior art because Applicant's traversal was inadequate.

Claim Objections

4. Claim 54 is objected to because of the following informalities: the term "wherein" is misspelled as "wherei\rln". Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 53 and 54 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The exact subject matter claims 53 and 54 are reciting is unclear from the language used in the claim. For the purpose of examination, Examiner is interpreting that claims 53 and 54 are reciting language that describes the iterative summation of employees and determining the effect on load by the iterative addition of each employee.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-3, 7-9, 14-17, 20-22, 27, 30-31, 33-34, 36, 41-42, and 50-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stuart et al. (U.S. Patent No. 6639982) in view of O'Brien (U.S. Patent No. 6587831).

As per claim 1, Stuart et al. teach:

A computer-implemented method for determining at least one effect of an agent staffing plan for a long-range period that is more than a month in the future, comprising:

Receiving a definition for each of a plurality of agent profiles, comprising a group of agents that have similar characteristics, and wherein the definition includes the similar characteristics, including at least one skill, at least one performance measure, and at least one attribute specifying an amount of change in the number of agents in the group during a specified time period (see column 7 lines 53-67, column 8 lines 6-37, column 11 lines 36-54, and column 12 lines 21-67; where agent profiles are defined. Agent profiles contain agent cost profiles, agent education, and agent training records. These variables are summed in to work group of agent teams. A work group or agent team is a group of agents. These variables are the same as the agent's capabilities. Furthermore, a variable defining the composition of the group for a specified period of time can be defined. Specifically, these variables can be

monitored per work minute. Change to team sizes are determined using optimization techniques.);

Defining at least one work load (column 15 lines 24-43; where a work load is defined.); and

Calculating at least one effect of applying the plurality of agent profiles to the at least one work load while satisfying the at least one criteria, wherein the calculated effect includes at least one performance measure for the at least one work load (see column 15 lines 44-67 and column 16 lines 1-19; where an optimization algorithm is used to with inputs of the number of agents, the type of agents, and the call volume load based to determine the optimal number of agents, teams, tours, and costs to handle the load.),

Wherein the calculating comprises:

Adding a first agent from one of the agent profiles to a propose schedule, wherein there is an available work associated with each agent in the one agent profile, and wherein the proposed schedule is for servicing at least one work load over a predefined time period (see column 15 lines 44-67, column 16 lines 1-19, and column 17 lines 14-30; where the user has the ability to adjust the number of agents and teams. The agent costs are determined for each period of time based on expected uncertain loads.);

Calculating an effect of adding the first agent, wherein adding an agent includes distributing the available work associated with the agent among the at least one work load (see column 15 lines 44-67, column 16 lines 1-19, and column 17 lines

14-30; where the user has the ability to adjust the number of agents and teams. The agent costs are determined for each period of time based on expected uncertain loads.);

Adding another agent from one of the agent profiles to the proposed schedule (see column 15 lines 44-67, column 16 lines 1-19, and column 17 lines 14-30; where the user has the ability to adjust the number of agents and teams. The agent costs are determined for each period of time based on expected uncertain loads.);

Calculating an effect of adding the next agent taking into account the effect of having added the first agent (see column 15 lines 44-67, column 16 lines 1-19, and column 17 lines 14-30; where the user has the ability to adjust the number of agents and teams. The agent costs are determined for each period of time based on expected uncertain loads.); and

Iteratively adding additional other agents from the agent profiles to the proposed schedule and iteratively calculating effects of adding the additional agents taking into account each agent already added until the available work for every agent in the plurality of agent profiles has been distributed (see column 15 lines 44-67, column 16 lines 1-19, column 17 lines 14-30, and column 19 lines 40-67; where the user has the ability to adjust the number of agents and teams. The agent costs are determined for each period of time based on expected uncertain loads. Linear programming optimization is the same as iterative summation.).

Stuart further explicitly teaches "specifying at least one criteria to be satisfied by a long-range staffing plan" (see column 6 lines 59-67 and column 7 lines 1-19; where

management specified criteria are used in the operation of the invention.). Stuart, however, fails to explicitly teach "wherein the plan covers a period that is more than a month in the future". O'Brien, however, in an analogous art explicitly teaches long-range staffing, where a time period is a month or greater (see column 4 lines 31-45; where a time period can be one week, one month, or any other time period.). The advantage of using a time period more than a month is that it enables users to plan for demand on a macro scale. It would have been obvious, at the time of the invention, to one of ordinary skill in the art to combine the feature of "the plan covers a period that is more than a month in the future" taught by O'Brien to Stuart in order to enable users to plan for demand on a macro scale, which is a goal of O'Brien (see column 1 lines 16-23).

As per claim 2, Stuart et al. teach:

The method of claim 1, wherein the complex system is a contact center, the at least one work load includes at least one queue, and wherein the at least one capability includes a skill set (column 7 lines 53-67, column 8 lines 36-62, column 11 lines 36-54, column 12 lines 21-41, and column 15 lines 24-43; where a work load is defined. The work load is the call volume where the volume is associated with a call queue. Agent profiles are defined. Agent profiles contain agent cost profiles, agent education, and agent training records. These variables are the same as the agent's capabilities. The complex system is a call center which is the same as a contact center.).

As per claim 3, Stuart et al. teach:

The method of claim 2, wherein the at least one performance measure includes an efficiency percentage, and wherein applying the plurality of agent profiles to the at least one work load includes staffing the at least one queue with the at least one agent profile (see column 15 lines 24-43; where the system optimizes the efficiency of handling incoming calls and optimizes staffing to handle the call volumes and minimize the queue.).

As per claim 7, Stuart et al. teach:

The method of claim 3, wherein the characteristics further include:

Shrinkage, wherein shrinkage comprises various categories of time for which an employee is paid, but during which the agent does not work (see column 5 lines 10-14 and column 18 lines 1-45; where productivity is measured and agent wages are considered. Productivity is the measure of the amount of work an agent does over a period of time.);

Burden, wherein burden comprises various categories of expenses associated with the agent including benefit expenses (see column 18 lines 1-45; where various categories of expenses includes an agent cost.); and

Wage (see column 18 lines 1-45; where wage is a characteristic measured.).

As per claim 8, Stuart et al. teach "specifying characteristics further comprises a time period required to bring an agent hired into the profile to a predefined level of efficiency" (see column 10 lines 5-23 and column 11 lines 55-67; where increasing the skill level of agents is done.). Stuart et al. fail to explicitly teach "hiring into a profile". It is old and well-known in the art to hire agents into a profile. The advantage of hiring into

a profile is that the personnel needed to achieve an optimal level of staffing can be accomplished. It would have been obvious, at the time of the invention, to one of ordinary skill in the art to incorporate the feature of "hiring into a profile" to the Stuart et al. system in order to meet the required number of agents needed for optimally handling a work load, which is a goal of Stuart et al. (see column 4 lines 55-57).

As per claim 9, Stuart et al. teach:

The method of claim 3, further comprising displaying the calculated effect of the long-range staffing plan, comprising displaying for each queue of the at least one queue for each of a plurality of predefined time periods (see column 19 lines 61-67 and column 20 lines 1-25; where the long-range plan can be simulated and monitored for specific time periods.):

A contact volume (see column 15 lines 55-67 and column 16 lines 1-5; where contact volume is a constraint in the optimization algorithm.);

A predefined average handling time goal (see column 15 lines 55-67 and column 16 lines 1-19; where call handling goals are determined by adjusting costs or maximizing utility.);

An actual service level (see column 11 lines 9-18 and column 21 lines 43-67; where actually service level is monitored to see if it reaches a critical level); and

A required service level (see column 12 lines 42-65; where service levels are predetermined.).

As per claim 14, Stuart et al. teach "the contact center comprises multiple queues and multiple types of contact media, wherein the skill set includes skills across multiple

queues and multiple contact media" (see column 9 lines 23-67 and column 10 lines 1-23; where the call center has multiple queues and multiple teams to handle specific queues.). Stuart et al. fail to explicitly teach "skills across multiple media". It is old and well-known in the art to use multiple types of media and have agents with skills in multiple media. The advantage using multiple media and agents with skills in multiple media is that it enhances the call center's ability to handle more load by optimally distributing load. It would have been obvious, at the time of the invention, to one of ordinary skill in the art to incorporate the feature of using multiple media and having agents with skills in multiple media in order to enable the call center to handle load by optimally distributing load, which is a goal of Stuart et al. (see column 5 lines 7-10).

As per claim 15, Stuart et al. teach:

The method of claim 14, wherein iteratively calculating effects of adding the additional other agents taking into account each agent already added includes assigning additional other agents across multiple queues and multiple contact media (see column 15 lines 44-67, column 16 lines 1-19, column 17 lines 14-30, and column 19 lines 40-67; where the user has the ability to adjust the number of agents and teams. The agent costs are determined for each period of time based on expected uncertain loads. Linear programming optimization is the same as iterative summation.).

Claim 15 further recites limitations already addressed by the rejection of claim 14; therefore the same rejection applies to this claim.

Claims 16-17, 20, and 22 recite a "system for long-range staffing planning in a contact center, wherein the multi-contact center processes a plurality of contact queues comprising a plurality of contact media taught by Stuart et al. (see column 1 lines 10-15). Claims 16-17, 19-20, 22-23, 24-25, and 27 further recite limitations already addressed by the rejections of claims 1-3, 7, and 9-10; therefore the same rejections apply to these claims as well.

Claims 21 and 27 recite the same limitations already addressed by the rejections of claims 8, 14, and 15; therefore the same rejections apply to these claims.

Claims 30-31, 33-34, and 36 recite "an electromagnetic medium containing executable instructions which, when executed in a processing system, cause the system to generate effects of a proposed long-range staffing plan for a contact center" taught by Stuart et al. (see column 6 lines 10-45). Claims 30-31, 33-34, and 36-39 further recite limitations already addressed by 1-3, 7, 9-10, 16-17, 19-20, 22-23, 24-25, 27-29; therefore the same rejections apply to these claims.

Claims 41 and 42 recite the same limitations already addressed by the rejections of claims 8, 14, and 15; therefore the same rejections apply to these claims.

As per claims 50-52 and 55-59, Stuart teaches the attributes specifying a change in agents of a team size, team configuration, and agent tour (see column 8 lines 6-37). Stuart does not expressly teach the specific data recited in claims 50-52 and 55-59; however, these differences are only found in the non-functional descriptive material and are not functionally involved in the steps recited nor do they alter the recited structural elements. The recited method steps would be performed the same regardless of the

specific data. Further, the structural elements remain the same regardless of the specific data. Thus, this descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, *see In re Gulack, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); In re Lowry, 32 F.3d 1579, 32 USPQ2d 1031 (Fed. Cir. 1994); MPEP ∋ 2106.*

As per claim 53, Stuart teaches:

The system of claim 16, wherein calculating an effect of adding the first employee further comprises calculating the effect of adding the first employee independent of adding any other employees, and wherein calculating an effect of adding the another employee further comprises calculating the effect of adding the another employee independent of adding any other employees (see column 15 lines 44-67, column 16 lines 1-19, column 17 lines 14-30, and column 19 lines 40-67; where the user has the ability to adjust the number of agents and teams. The agent costs are determined for each period of time based on expected uncertain loads. Linear programming optimization is the same as iterative summation. Linear optimization iteratively adds values and determines the effect of adding the values, until an optimal value is determined.).

As per claim 54, Stuart teaches:

The system of claim 16, wherein calculating an effect of adding the first employee further comprises calculating the effect of adding the first employee as if the first employee is the only employee being added, and wherein calculating the effect of adding the another employee as if the another employee is the only

employee being added (see column 15 lines 44-67, column 16 lines 1-19, column 17 lines 14-30, and column 19 lines 40-67; where the user has the ability to adjust the number of agents and teams. The agent costs are determined for each period of time based on expected uncertain loads. Linear programming optimization is the same as iterative summation. Linear optimization iteratively adds values and determines the effect of adding the values, until an optimal value is determined.).

9. Claim 13, 26, 35, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stuart et al. (U.S. Patent No. 6639982) in view of O'Brien (U.S. Patent No. 6587831) and in further view of Kintner et al. (U.S. Patent No. 6732079).

As per claim 13, Stuart et al. fail to explicitly teach "calculating estimated training costs of increasing an employees level of performance". Kintner et al. teaches "calculating estimated costs of increasing an employees level of performance" (see Kintner column 2 lines 56-67 and abstract; where the cost of training employees is considered and incorporated in an algorithm for a staffing plan.). The advantage of this feature is that it enables an agent to efficiently utilize idle time in a manner that is beneficial to the company. It would have been obvious, to one of ordinary skill in the art, to combine the feature of "calculating estimated costs of increasing an employees level of performance" in order to enable an agent to efficiently utilize idle time in a manner that is beneficial to the company, which is a goal of Stuart et al. (see column 5 lines 10-14).

Claims 26, 35, and 40 recite limitations already addressed by the rejection of claim 13; therefore the same rejections apply to these claims.

10. Claims 43-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stuart et al. (U.S. Patent No. 6639982) in view of O'Brien (U.S. Patent No. 6587831) and in further view of Castonguay et al. (U.S. Patent No. 5911134).

As per claim 43, Stuart et al. teach "wherein the at least one workload comprises a plurality of queues" (see column 9 lines 23-67 and column 10 lines 1-23; where the call center has multiple queues and multiple teams to handle specific queues.), "wherein each queue is associated with a remaining load and a net staffing" (see column 9 lines 24-55; where each queue is associated with a remaining load and each queue is handled by a specific team), "wherein each agent profile is associated with a plurality of Erlang-by-queue factors" (see column 1 lines 24-49; where each agent is associated with Erlang factors). Stuart et al. fail to explicitly teach "wherein the calculating further comprises: redistributing work among agent profiles by computing the plurality of Erlang-by-queue factors for each agent profile; recalculating load remaining for each of the plurality of queues by computing the net staffing and remaining load associated with each queue; and repeating the redistributing work and recalculating load steps until the available work of agents in all agent profiles has been distributed". Castonguay et al. teach "redistributing work among agent profiles by computing the plurality of Erlang-by-queue factors for each agent profile" (see Castonguay column 11 lines 12-67 and column 12 lines 1-61; where work is redistributed by computing Erlangs numbers. The Erlangs factors include call rates, average call handling time, and service level from call rates.); recalculating load remaining for each of the plurality of queues by computing the net staffing and remaining load associated with each queue" (see Castonguay column

11 lines 12-67 and column 12 lines 1-61; where load is recalculated based on a predetermined service level and an adjusted number of available agents.); "and repeating the redistributing work and recalculating load steps until the available work of agents in all agent profiles has been distributed" (see Castonguay column 12 lines 45-67; where all of the computations are redone until a winner is selected.). The advantage of performing these steps is that it enables the call center's ability to handle more load by optimially distributing load. It would have been obvious, at the time of the invention, to one of ordinary skill in the art to combine the steps of "wherein the calculating further comprises: redistributing work among agent profiles by computing the plurality of Erlang-by-queue factors for each agent profile; recalculating load remaining for each of the plurality of queues by computing the net staffing and remaining load associated with each queue; and repeating the redistributing work and recalculating load steps until the available work of agents in all agent profiles has been distributed" taught by Castonguay et al. to Stuart et al. in order to enable the call center to handle load by optimally distributing load, which is a goal of Stuart et al. (see column 5 lines 7-10).

As per claim 44, Stuart et al. teach "wherein each agent profile further is associated with a headcount" (see column 8 lines 7-62; where an agent profile is associated with a team size and the number of agents in a team, which are the same as a headcount.), "an hours-per-month" (see column 12 lines 58-67 and column 13 lines 1-20; where the average standard time worked by an agent over a period of time is determined.), "a number of queues worked by the profile" (see column 9 lines 24-55;

where the number of queues worked by a specific team is determined), "a total effective Erlangs performed by one agent in the agent profile" (see column 1 lines 24-49; where the load per agent is determined), "and wherein the redistributing work step further comprises: Redistributing work among the agent profiles for each agent profile based on the associated headcount" (see column 8 lines 7-62; where an agent profile is associated with a team size and the number of agents in a team, which are the same as a headcount.), "the hours-per-month" (see column 12 lines 58-67 and column 13 lines 1-20; where the average standard time worked by an agent over a period of time is determined.), "the number of queues worked by the profile" (see column 9 lines 24-55; where the number of queues worked by a specific team is determined), "and the total effective Erlangs" (see column 1 lines 24-49; where the load per agent is determined). Stuart et al. fail to teach "by computing the plurality of the plurality of Erlang-by-queue factors". This limitation is addressed by the rejection of claim 43; therefore the same rejection applies to this claim as well.

As per claim 45, Stuart et al. teach:

The method of claim 44, wherein each queue is further associated with a bunching variable (see column 9 lines 24-55; where overflowing calls are not sent to a secondary group at random, but are grouped as overflowing calls designated for the secondary team by the system), wherein each profile is further associated with a plurality of queue scaling factors (see column 9 lines 23-67 and column 10 lines 1-23; where the call center has multiple queues and multiple teams to handle specific queues. The normalized distribution of the load is based on several factors including

the size of the team, skill level of the team, and service level assigned to the team.), and computing the plurality of Erlang-by-queue factors for each agent profile further comprises:

Computing each queue scaling factor based on the corresponding queue bunch factor, the corresponding queue remaining load, and a previous scaling factor (see column 9 lines 24-55; where overflowing calls are not sent to a secondary group at random, but are grouped as overflowing calls designated for the secondary team by the system. The primary team is assigned a threshold and each remaining load beyond the threshold is designated by the system to the secondary team.);

Claim 45 further recites limitations already addressed by the rejections of claims 43 and 44; therefore the same rejections apply to this claim as well.

As per claim 46, Stuart et al. teach:

The method of claim 43, wherein each queue is further associated with an expected service level (see column 12 lines 42-65; where service levels are predetermined.), a call volume (see column 15 lines 55-67 and column 16 lines 1-5; where contact volume is a constraint in the optimization algorithm.), an average handle time (see column 15 lines 55-67 and column 16 lines 1-19; where call handling goals are determined by adjusting costs or maximizing utility.), a remaining load and a net staffing (see column 9 lines 24-55; where each queue is associated with a remaining load and each queue is handled by a specific team), wherein the recalculating load step further comprises:

Recalculating load remaining for each of the plurality of queues by computing the net staffing and remaining load associated with each queue (see column 9 lines 24-55; where each queue is associated with a remaining load and each queue is handled by a specific team), wherein the remaining load is based on the queue call volume (see column 15 lines 55-67 and column 16 lines 1-5; where contact volume is a constraint in the optimization algorithm.), the queue average handle time (see column 15 lines 55-67 and column 16 lines 1-19; where call handling goals are determined by adjusting costs or maximizing utility.), and the queue expected service level (see column 12 lines 42-65; where service levels are predetermined.).

Claim 46 further recites limitations already addressed by the rejection of claim 43; therefore the same rejection applies to this claim.

As per claim 47, Stuart et al. teaches:

The method of claim 46, wherein the recalculating load step further comprises:

Calculating the queue expected service level based on the queue net staffing, the queue average handle time, a queue call rate, and a queue goal-seconds (see column 9 lines 24-55, column 15 lines 55-67, and column 16 lines 1-60; where the expected service level is determined using several factors, including queue average call time, queue call rate, queue call abandon rate, queue second, and calls per second. Net staffing for each team to handle an expected queue is also determined.).

As per claim 48, Stuart et al. teach:

The method of claim 43, wherein each queue is associated with an occupancy (see column 9 lines 24-55; where the number of agents to handle the queue is determined. Occupancy is defined as the number of agents servicing a queue as per Specification page 17.), wherein agent profile is further associated with a load and an hours-per-month (see column 9 lines 24-55, column 12 lines 58-67, and column 13 lines 1-20; where the number of agents to handle the queue is determined. The average standard time worked by an agent over a period of time is determined.), and further comprising the step of:

For each agent profile, iterating through each queue for which the profile is set to answer and adding the agent profile load the remaining load associated with the iterated queue, multiplied by a percentage of the net staffing associated with the iterated queue to which the agent profile contributes (see column 15 lines 44-67, column 16 lines 1-19, column 17 lines 14-30, and column 19 lines 40-67; where the user has the ability to adjust the number of agents and teams. The agent costs are determined for each period of time based on expected uncertain loads. Linear programming optimization is the same as iterative summation. The constraints are used to determine the optimal distribution. Simulation of the optimal distribution is done to determine the best long-range plan.); and

For each agent profile, computing the agent profile occupancy by dividing the agent profile load by the agent profile headcount multiplied by the agent profile hours-per-month (see column 12 lines 58-67 and column 13 lines 1-43; where an agent cost is determined. The agent cost is determined by computing the agent

standard work time and wages. The agent standard work time is also used to determine the agent occupancy.).

Stuart et al. fail to explicitly teach "initializing each agent profile load to zero". It is old and well-known in the art to initialize an agent profile load to zero. When determining the optimal distribution of load amongst a plurality of agents, the stochastic programming is known to being at zero. The advantage of "initializing each agent profile load to zero" is that it enables a user to more accurately distribute the load amongst agents. It would have been obvious, at the time of the invention, to one of ordinary skill in the art to incorporate "initializing each agent profile load to zero" to the Stuart et al. system in order to more accurately distribute load amongst agent profiles, which is a goal of Stuart et al. (see column 5 lines 7-10).

As per claim 49, Stuart et al. teach:

The method of claim 48, further comprising the step of:

Computing an occupancy for each queue by dividing queue remaining load by queue net staffing (see column 9 lines 24-67; where a threshold for each team is determined. The remaining load beyond the threshold is the queue that is assigned to a second team. This remaining load is the queue for the second team and therefore is the same as the occupancy.); and

For each agent profile, bounding the agent profile occupancy by the highest value of queue occupancy in the plurality of queues (see column 9 lines 24-67; where a threshold load for each team is determined. The threshold is the highest value of queue that the team can handle.).

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kalyan K. Deshpande whose telephone number is (571)272-5880. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

kkd

Romain Jeanty
Primary Examiner
Art Unit 3623